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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/725,957	11/30/2000	Linda J. Harris	2315-115	1560

6449 7590 04/18/2003

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EXAMINER
KRUSE, DAVID H

ART UNIT	PAPER NUMBER
1638	16

DATE MAILED: 04/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

File Copy

Office Action Summary	Application No.	Applicant(s)	
	09/725,957	HARRIS ET AL.	
	Examiner	Art Unit	
	David H Kruse	1638	

-- The MAILING DATE of this c mmunication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 January 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,5-8,10-13,15-18 and 20-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5-8,10-13,15-18 and 20-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 January 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *14* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

STATUS OF THE APPLICATION

1. This Office action is in response to the Amendment and Remarks filed 27 January 2003.

2. Claims 3, 4, 9, 14, 19 and 23 have been cancelled. Claims 1, 2, 5-8, 10-13, 15-18 and 20-22 are pending.

3. The Draftsman has approved the drawings.

4. The typographical error in the amendment of page 6 of the specification has been corrected by the Examiner; the term "nonocot" has been corrected to read -- monocot -- (page 2 of the response).

5. Those rejections not specifically addressed in this Office action are withdrawn in view of Applicant's amendments and/or arguments.

6. Applicant's arguments directed to the objection to claims 6, 11 and 16 are found persuasive and the Examiner withdraws the objection (page 6, 5th paragraph of the Remarks). This Objection was made in view of the Restriction/Election Requirement made as directed to election of a single nucleotide sequence to be examined in conjunction with the elected invention. After consideration of Applicant's arguments and the nature of the invention, the Examiner withdraws the requirement to elect a single nucleotide sequence.

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Sequence Rules

8. This application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 CFR § 1.821(a)(1) and (a)(2). However, this application fails to comply with the requirements of 37 CFR §§ 1.821 through 1.825, specifically Figures 7 and 8 disclose nucleotide and amino acid sequences, respectively, but there is no designation of the SEQ ID NO: in the figure or the Brief Description of the Drawings, see 37 CFR § 1.821(2)(d).

Failure to comply with these requirements will result in ABANDONMENT of the application under 37 CFR § 1.821(g).

Claim Objections

9. Claims 2, 8 and 13 are objected to under 37 CFR § 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 1 is now directed to a single amino acid substitution, hence the limitations "deletion, addition or inversion" at claims 2, 8 and 13 fail to further limit the modified monocot nucleic acid of claim 1.

Claim Rejections - 35 USC § 112

10. Claims 1, 6, 11, 16 and 22 remain rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. This rejection is repeated for the reason of record as set forth in the last Office action mailed 26 July 2002.

Applicant's arguments filed 27 January 2003 have been fully considered but they are not persuasive.

At claim 1, the phrases "the modification is sufficient to reduce" and "is insufficient to destroy" remain indefinite because it is unclear what is "sufficient" or "insufficient", said phrases being relative. Hence, it is unclear what the metes and bounds of the claim are. Applicant argues that the specification teaches that it is believed that the mycotoxin binds to the wild type protein but not to the mutant gene product (page 7, 2nd paragraph of the Remarks). The Examiner notes that on page 7, 2nd paragraph of the specification, Applicant states that "it is believed that the mycotoxin binds to the wild type protein but not to the mutant gene product", and "it would be modified to a sufficient extent to reduce the mycotoxin binding capabilities". In the instant case Applicant states that the mutant protein does not bind the mycotoxin and that the mutant protein has reduced binding capability, thus it remains unclear what is sufficient or insufficient as outlined in the previous Office action.

At claim 1, lines 6-7, the phrase "based on the amino acid numbering of the rice nucleic acid" is indefinite because it is unclear how one bases an amino acid numbering on a nucleic acid.

At claims 6, 11 and 16, the phrase "a functional equivalent thereof" remains indefinite for the reasons given in the previous Office action. Applicant argues that the instant phrase was accepted in the parent application and for consistency (page 7, 4th paragraph of the Remarks). This argument is not found to be persuasive because each

application is examined upon it's own merits. In addition, it is unclear if the functional equivalent is directed to the list of SEQ ID NOs or "a cysteine at position 258".

At claim 22, lines 2 and 6, the phrase "a suitable plant" remains indefinite because it is unclear what the metes and bounds of "suitable" are. Applicant argues that the instant phrase was accepted in the parent application and for consistency (page 7, 6th paragraph of the Remarks). This argument is not found to be persuasive because each application is examined upon it's own merits.

11. Claims 1, 2, 5-8, 10-13, 15-18 and 20-22 remain rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This rejection is repeated for the reason of record as set forth in the last Office action mailed 26 July 2002. Applicant's arguments filed 27 January 2003 have been fully considered but they are not persuasive.

Applicant argues that present application supports the claim to the monocots because the overall amino acid sequence identity is at least 92.5% with an identical alignment between amino acids 209 and 284 based on the rice amino acid numbering system. Applicant argues that despite the fact that the specification examples only provide an example with a modified rice sequence, one of ordinary skill in the art, when reviewing the application readily realizes that due to the sequence homology, a similar modification made at position 258 in any of the monocot sequences disclosed in the application resulting in the same modification was contemplated by Applicants (page 8,

2nd paragraph of the Remarks). The Examiner responds that in the instant case, the only modification adequately described that produces a ribosomal L3 protein that has reduced mycotoxin binding capabilities is a substitution from Trp to Cys at position 258 of the rice amino acid sequence, but the instant claims are directed to any modification at said position in any monocot ribosomal L3 protein. As stated above, it is unclear if the phrase "functional equivalent thereof" at claims 6, 11 and 16 is directed to a functional equivalent of cysteine or of the recited amino acid sequences.

12. Claims 1, 2, 5-8, 10-13, 15-18 and 20-22 remain rejected under 35 U.S.C. § 112, first paragraph, because the specification, while being enabling for a modified nucleic acid encoding a rice ribosomal protein L3 wherein said protein has a cysteine at position 258, a cloning vector comprising said modified nucleic acid, a plant comprising said nucleic acid and a method of increasing resistance in a plant to trichothecene mycotoxins comprising transforming a plant with said nucleic acid, does not reasonably provide enablement for any modified nucleic acid encoding a ribosomal protein L3 wherein the modification is sufficient to reduce the mycotoxin binding capabilities of the encoded ribosomal protein L3 but is insufficient to destroy the function of the nucleic acid as a ribosomal protein gene, a cloning vector comprising said any modified nucleic acid, plants comprising said any modified nucleic acid or method of using said any modified nucleic acid. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. This rejection is repeated for the reason of record as set forth in the last Office action mailed 26 July 2002. Applicant's

arguments filed 27 January 2003 have been fully considered but they are not persuasive.

Applicant argues that a person of ordinary skill in the art would be able to prepare amino acid substitutions other than the tryptophan to cysteine substitution at the specified residue and that the skilled artisan would also be able to select modified genes that produce modified ribosomal L3 proteins and continue to function in the presence of the mycotoxin desoxynivalenol (page 9, 2nd paragraph of the Remarks). The Examiner responds that the instant claims are directed to resistance to trichothecene mycotoxins, not just desoxynivalenol, and that Applicant has provided no evidence that any other amino acid substitution would be universally enabling, for any monocot ribosomal L3 protein.

Applicant argues that Applicant has identified two additional yeast strains comprising an Rpl3 gene that encodes the amino acid arginine at position 255, that are tolerant to the mycotoxin DON, and that a person of ordinary skill in the art would be able to prepare amino acid substitutions other than tryptophan to cysteine substitution and select modified genes (page 9, 3rd paragraph of the Remarks). This argument is not found to be persuasive because Applicant provides no evidence that a tryptophan to arginine at position 258 of the rice amino acid sequence would confer trichothecene mycotoxin tolerance. See *Genentech, Inc. v. Novo Nordisk, A/S*, 42 USPQ2d 1001, 1005 (Fed. Cir. 1997), which teaches that disclosure of a "mere germ of an idea does not constitute [an] enabling disclosure", and that "the specification, not the knowledge of one skilled in the art" must supply the enabling aspects of the invention.

Claim Rejections - 35 USC § 103

13. Claims 1, 2, 5-8, 10-13, 15-18 and 20-22 remain rejected under 35 U.S.C. § 103(a) as being unpatentable over Kim *et al* 1990 (Gene 93:177-182) in view of Schultz *et al* 1983 (Journal of Bacteriology 155(1):8-14) and in further view of Kim 1991 (Dissertation Abstract, Ohio State University) and Bohn *et al* 11 August 1997 (Genbank Accession No. Z74971, submitted 4 July 1996). This rejection is repeated for the reason of record as set forth in the last Office action mailed 26 July 2002. Applicant's arguments filed 27 January 2003 have been fully considered but they are not persuasive.

Applicant argues that Applicant has demonstrated by tobacco transformation that the modified Rpl3 gene functions in plants and that Applicant needed to develop assays to test the direct effect of trichothecene mycotoxins on transformed tobacco cells. Applicant argues that it was not sufficient to introduce the unmodified version of the rice Rpl3 gene and that it was the modification, which was important to provide trichothecene tolerance (page 10, 3rd paragraph of the Remarks). This argument is not found to be persuasive because the instant rejection is directed to the obviousness of modifying a plant nucleic acid encoding a ribosomal L3 protein as taught by the art to produce mycotoxin resistance in the ribosomal L3 protein.

Applicant argues that it could not be easily predicted that one could use information from a chemical tolerance mutant screen in yeast to produce a transgenic plant tolerant of a broad host fungal pathogen (page 10, 3rd paragraph of the Remarks). The Examiner responds that Applicant contradicts this argument on page 9, 3rd

paragraph of this response, stating that Applicant has identified two additional yeast strains having a arginine substitution at position 255, which confers DON mycotoxin resistance, and that Applicant infers that this evidence is sufficient to enable such a mutation in a plant ribosomal L3 protein.

Applicant argues that the Bohn *et al* reference (1997) in Genbank reveals that the wild-type gene sequence was publicly released on August 11, 1997, one day before the US parent application was filed (page 11, 2nd paragraph of the Remarks). The Examiner responds that Applicant has provided no evidence under 37 CFR § 1.131 to establish invention of the subject matter of the rejected claim prior to the effective date of the reference or activity on which the rejection is based.

Applicant argues that even if one knew which amino acid had been altered in the yeast tcm1 coding sequence, it was also not obvious that the same modification in the plant RPL3 protein would function properly in plants (page 11, 2nd paragraph of the Response). This argument is not found to be persuasive because Applicant argues that a subsequent mutation substituting arginine for tryptophan at position 255 of the yeast ribosomal L3 protein identified by Applicant can be directly translated into a mycotoxin resistant plant ribosomal L3 protein having the equivalent amino acid substitution.

Double Patenting

14. Claims 1, 2, 5-8, 10-13, 15-18 and 20-22 remain rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-18 of U.S. Patent No. 6.060,646. This rejection is repeated for the reason of record as set forth in the last Office action mailed 26 July 2002. Applicant states in the

Remarks filed 27 January 2003 that Applicant intends to address these rejections once otherwise allowable subject matter is indicated (page 12, 2nd paragraph).

15. Claims 6, 11 and 16 are rejected under 35 U.S.C. § 101 as claiming the same invention as that of claims 4, 8 and 12 respectively of prior U.S. Patent No. 6,060,646. This rejection is repeated for the reason of record as set forth in the last Office action mailed 26 July 2002. Applicant states in the Remarks filed 27 January 2003 that Applicant intends to address these rejections once otherwise allowable subject matter is indicated (page 12, 2nd paragraph).

Conclusion

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR § 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR § 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

17. No claims are allowed.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David H. Kruse, Ph.D. whose telephone number is (703) 306-4539. The examiner can normally be reached on Monday to Friday from 8:00 a.m. to 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Amy Nelson can be reached at (703) 306-3218. The fax telephone number for this Group is (703) 872-9306 Before Final or (703) 872-9307 After Final.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group Receptionist whose telephone number is (703) 308-0196.

DAVID T. FOX
PRIMARY EXAMINER
GROUP ~~180~~ 1638

David H. Kruse, Ph.D.
16 April 2003